PATENT

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Inventor	:	REES, Frank L.
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For	:	Gauss-Rees Parametric Ultrawideband System
Group Art Unit	:	3662
Examiner	:	LOBO, IAN J

MS: Appeal
Honorable Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

S I R :

Appellant respectfully files this Reply to the Examiner's Answer dated 7 May 2008.

I. Overview

Claim 1 has been rejected pursuant to 35 U.S.C. Sec. 103. The Examiner contends that Claim 1 is obvious based on Sen et al. in view of Rees, as more particularly set out in the Answer at page 4. The Examiner contends that "Sen et al. discloses.... A secondary wavelet (backscattered signals)...." The basis for the Examiner's contention is quoted in single space below, from page 5 of the Answer:

> "... it is the examiner's opinion that the backscattered signals that are produced by the reflection of the primary acoustic waveform off an identifiable object reads upon the claimed "secondary wavelet" that is produced by the non-linear effect."

In reply, generally and with all due respect, Appellant submits that this contention is not true and reflects a basic misunderstanding of the art.

As an overview, as the terminology is used in the art (e.g., dictionary definitions of record and in Appellant's specification), a "wavelet" is a subset [or snippet] of a wave. A "secondary wavelet" results from non-linear acoustic generation [or radiation] produced by matter when a primary wave impinges upon the matter. The terms "primary" and "secondary" are consistent with a transformational process - think the primary and secondary windings of a transformer. On the other hand, "backscattering" [or backscatter] describes a deviation of a wave upon striking an object at a deviation angle greater than 90 degrees from the incident wave - think of light reflecting back from a mirror in the direction of the light source. The cause and effect of backscattering are different than the cause and effect of a secondary wavelet.

Backscattering therefore is the resulting action [change in direction] of a primary wave, whereas a secondary wavelet is radiation produced by the materials being impinged by the primary wave, so as to cause non-linear effects. (Consistent with the instant invention herein, these non-linear induced effects result in different space-time relationships (frequencies, etc.) that are indicative of the type of material, so as to enable the detection that is more precisely stated in the claims.) In sum, one having ordinary skill in the art would know that "backscattering" and "a secondary wavelet" are different phenomena that have no bearing on each other, and that backscattering in no way reads on a secondary wavelet.

To further appreciate the different meanings of secondary wavelet versus "backscattering" in the context of the claim as a whole, consider claim 1.

1. A method of identifying an object, the method including the steps of:

directing a primary acoustic waveform at the object to produce a nonlinear acoustic effect by using multiple projectors driven by a synthetic spectrum;

receiving a secondary wavelet produced by the nonlinear effect; and

processing the received secondary wavelet in identifying the object.

Backscattering is not *…produced by the nonlinear effect…*.

The present invention claims a secondary wavelet produced by the nonlinear effect. The Sec. 103 obviousness rejection is premised on Sen et al., which is directed to backscattering. Backscattering and secondary wavelets are different phenomena that have no bearing on each other. Contrary to the Examiner's contention and rejection, backscattering does not read on secondary wavelet produced by the nonlinear effect.

II. Comparison of Appellant's Brief, the Examiner's Answer, in view of Appellant's Reply to the Answer

The following portion of the Reply is structured to set out a comparison of the Appellant's contentions as organized in the Brief, the Examiner's Answer to the contentions, and Appellant's Reply to the Examiner's Answer.

A. The applied references fail to disclose all expressly claimed elements

1. Failure to consider filed evidence of unobviousness.

i. Appellant's Argument in the Brief

In the Brief, at page 10, Appellant disagreed with the Examiner's contention that Sen et al. discloses secondary wavelet produced by the nonlinear effect. Appellant argued that the Examiner failed to consider dictionary definitional evidence of unobviousness and that the failure to consider such evidence is error.

ii. Examiner's Argument in the Answer

In the Answer, at pages 5-6, the Examiner contends:

> "It is not that the 'definitional rebuttal evidence' was not considered, but rather that it did not provide any specific limitations in the claims and was not commensurate in the scope with that argued."

iii. Appellant's Reply

At the outset, the examination was procedurally defective for being untimely, according to the Manual of Patent Examining Procedure. MPEP Sec. Sec. 707.7(f) provides:

> "Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it."

The first time that the Examiner has acknowledged the definitional rebuttal evidence is in the Answer, which suggests that the evidence was not properly considered previously. Waiting until the Answer before commenting on Appellant's definitional evidence of unobviousness is contrary to MPEP Sec. 707.7(f) and is, at best, highly prejudicial. Appellant has had to pay for a pre-appeal brief review and an appeal before obtaining this first comment on the evidence. This has hurt the Appellant.

Further, as the Examiner now alleges, if the definitional rebuttal evidence were to have been in some way insufficient, Appellant could have supplemented the evidence prior to filing the Reply.

However, the Examiner's untimely comment is still in error: the evidence shows that the Examiner's opinion of the meaning of claim terminology is not correct, as elaborated in the Reply Overview and the Reply section below. In any case, though, the rejection is improper pursuant to MPEP Sec. Sec. 707.7(f), and as discussed below, it is also contrary 35 U.S.C. Sec. 132.

2. Misconstruing claim 1

i. Appellant's Argument in the Brief

In the Brief, at page 10, Appellant stated:

"Claim terms must be interpreted in the manner understood by those skilled in the art. Appellant submits that the artisans would have understood that the meaning of a secondary wavelet consistent with the dictionary definitions that Appellant made of record, but which were not considered. See Appendix. The dictionary definitions are consistent with usage in the specification, as indicated in the above-provided support for the claims. The rejection offers no reason why the artisan would have interpreted the claim terminology (and backscattering in Sen et al.) inconsistent with dictionary and specification meanings. The rejection therefore fails to make a proper case of prima facie obviousness."

In the Brief, at page 10, Appellant also stated:

'35 U.S.C. Sec. 132 requires that the PTO provide "the reasons for such rejection... together with such information as may be useful in judging the propriety of continuing prosecution...." There is no mention whatsoever of the claimed secondary wavelet in cited art cited in the Office Action. Thus, the rejection is premised on the Examiner's contention that backscattering in Sen et al. discloses the claimed secondary wavelet. Accordingly, pursuant to 35 U.S.C. Sec. 132, the Examiner is required to explain how, pursuant to his rejection, backscattering discloses the secondary wavelet. Further, the Examiner's declaration or affidavit to establish the contention is required.'

Additionally, the Board's attention is respectfully drawn to pages 7-9 of the Brief for further Appellant contentions.

ii. Examiner's Argument in the Answer

In the Answer, at page 5, the Examiner argues:

"... it is the examiner's opinion that the backscattered signals that are produced by the reflection of the primary acoustic waveform off an identifiable object reads upon the claimed "secondary wavelet" that is produced by the non-linear effect."

iii. Appellant's Reply

As set forth in the above-provided Overview, with all due respect, Appellant submits that the Examiner's contention is not true and reflects a basic misunderstanding of the art.

The present invention claims a secondary wavelet produced by the nonlinear effect. The Sec. 103 obviousness rejection is premised on Sen et al., which is directed to backscattering. Backscattering and secondary wavelets are different phenomena that have no bearing on each other. Backscattering is not *...produced by the nonlinear effect....* Appellant requested, pursuant to 35 U.S.C. Sec. 132, that the Examiner explain how, pursuant to his rejection, backscattering discloses the secondary wavelet produced by the nonlinear effect. No explanation was provided. Appellant submits that the reason the Examiner provided no explanation is because there is no explanation. Contrary to the Examiner's contention and rejection, backscattering does not read on secondary wavelet produced by the nonlinear effect.

More particularly, the Examiner's opinion is not controlling evidence in the face of evidence to the contrary and a requirement under 35 U.S.C. Sec 132 for information.

Appellant timely argued that the claims should be construed based on their plain and ordinary meaning, consistent with intrinsic evidence and extrinsic evidence. The intrinsic evidence comprises Appellant's specification (e.g., in the instant application, secondary wavelet information is received by means of 18 in Figure 30 and Figure 31, and processed in Figure 31 at boxes 38 and/or 40, with the main processor being 42 – see also the specification as it refers to each of these items). The extrinsic evidence comprises dictionary definitions of record. Appellant also timely required (pursuant to 35 U.S.C. Sec. 132) the Examiner to provide information or evidence as to how backscattering in Sen et al. could read on Appellant's claimed secondary wavelets. The Examiner provided no information or definitional evidence whatsoever and instead relied solely on his personal opinion (Answer, page 5).

The rejection offers no reason why the artisan would have interpreted the claim terminology (and backscattering in Sen et al.) inconsistent with dictionary and specification meanings. Thus the claim has not been properly interpreted by the Examiner.

A rejection is improper if it is premised on an improper construing of the claim. Because the Examiner has improperly construed the claim, based on his opinion that is contradicted by intrinsic and extrinsic evidence of record, the instant rejection fails to make a proper case of prima facie obviousness.

3. All claim elements have not been shown in the cited art

a. Backscattering does not read on the claimed "Secondary Wavelet"

i. Appellant argument in the Brief

In the Brief at pages 7-8, Appellant repeated what was argued its filing of April 26, 2007, as follows:

"Backscattering *does not disclose a secondary wavelet*, e.g., in Sen et al.

In its plain and ordinary meaning with regard to acoustics, 'backscattering' refers to:

> "the deflection of radiation or particles by scattering through angles greater than 90 (degrees) with reference to the original direction of travel."

See, for example, the enclosed definition from *CHAMBERS: Dictionary of Science and Technology* (1999); see also McGraw-Hill Dictionary of Scientific and Technical Terms (1984) (also enclosed).

In its plain and ordinary meaning with regard to acoustics, 'wavelets' refers to:

> "mathematical functions that cut up data into different frequency components, and then study each component with a resolution matched to its scale. They have advantages over traditional Fourier methods in analyzing physical situations where the signal contains discontinuities *and sharp spikes*, as well as being compactly constrained in time duration."

See, for example, the enclosed - which originally appeared in The Institute of Electrical and Electronics Engineers) (IEEE) Computational Science and Engineering, Summer 1995, vol. 2, num. 2, published by the IEEE Computer Society, 10662 Los Vaqueros Circle, Los Alamitos, CA 90720, USA, TEL +1-714-821-8380, FAX +1-714-821-4010, and can be found on the Web as www.amara.com/IEEEwave/IEEEwavelet.html.

> It would seem from the plain and ordinary meaning of the terms that the Examiner's contended 'backscattering' **has no bearing whatsoever** on the claimed secondary wavelet... etc."

ii. Examiner argument in the Answer

In the Answer, in paragraph 10, the Examiner argued that:

> "...*it is the Examiner's opinion that backscattered signals* that are produced by the reflection of the primary acoustic waveform off an identifiable object *reads on the claimed 'secondary wavelet'* that is produced by the non-linear effect."

(Italics added.)

iii. Appellant's Reply

In order to withhold a patent based on 35 U.S.C. Sec. 103, it is the Examiner's burden to make out a case of prima facie case of obviousness based on the evidence of record.

Though it is not Appellant's burden of proof, Appellant provided dictionary definitions as evidence that the Examiner's opinion is inconsistent with common usage in the art and inconsistent with the Appellant's specification. Appellant further evidenced that backscattering and secondary wavelets are different phenomena that have no bearing on each other, and that contrary to the Examiner's contention and rejection, backscattering does not read on secondary wavelet produced by the nonlinear effect.

Though it is not Appellant's burden of proof, Appellant required any evidence that the Examiner might have to substantiate his opinion, at pages 8-9 of the Brief, which corresponds to a portion of the filing of April 26, 2007:

> "35 U.S.C. Sec. 132 requires that the PTO provide "the reasons for such rejection... together with such information as may be useful in judging the propriety of continuing prosecution...." There is no mention whatsoever of the claimed secondary wavelet in cited art cited in the Office Action. Thus, the rejection is premised on the Examiner's contention that backscattering in Sen et al. discloses the claimed secondary wavelet. Accordingly, pursuant to 35 U.S.C. Sec. 132, the Examiner is required to explain how, pursuant to his rejection, backscattering discloses the secondary wavelet. Further, the Examiner's declaration or affidavit to establish the contention is required."

The Examiner provided no information and no evidence other than his personal opinion,

which is contrary to the dictionary definitions of record and contrary to Appellant's specification.

There is no evidence that the Examiner's mere opinion is correct, while there is contrary evidence of record. It is therefore respectfully submitted that the Examiner has not made out a case of prima facie obviousness under Sec. 103.

b. Patentable distinction in the Claim

i. Appellant argument

The Board's attention is respectfully drawn to the Brief at pages 10-11, Paras. 3-4. Also in the Brief, at page 9, Appellant repeated the following from its filing of April 26, 2007:

> "For reference, in the instant application, secondary wavelet information is received by means of 18 in Figure 30 and Figure 31, and processed in Figure 31 at boxes 38 and/or 40, with the main processor being 42. See also Appellant's specification as it refers to these items. The Examiner's 132 explanation and the Examiner's declaration should identify the *particular* components of Sen et al. that are contended as:
>
> > receiving the secondary wavelet produced by the nonlinear effect; and
> >
> > processing the received secondary wavelet in identifying the object.'
>
> Further, the Examiner's attention is drawn to instant application para. 146, wherein the last sentence states:
>
> > 'If the desire is to produce clean seismic, multi-channel data stacking or to employ spectroscopic analysis for discerning material-specific additional spectral components (that are *induced by nonlinear interaction within or inelastic scattering from concealed material*), a clean Secondary Wavelet energy spectrum is important.'
>
> (Emphasis added.) The Examiner's 132 explanation and the Examiner's declaration should explain by what means his contended secondary wavelet is produced by the nonlinear effect in Sen et al."

ii. Examiner Argument

In the Answer at page 5, paragraph 1, the Examiner argued:

> "There is no patentable distinction in the claim that differentiates the backscattered signals from the secondary wavelets, *both of which are received and processed, in identifying an object.*"

(Italics added.)

iii. Appellant's Reply

First, of course, that "both are received and processed in identifying an object" does not make one read on the other. For example, hydrogen and oxygen can both be received and processed in making water, but that does not make hydrogen read on oxygen. The Examiner uses fallacious logic to try to circumvent his deficiency in definitional evidence.

Second, and more to the point, there is no mention whatsoever in Sen et al. of Appellant's claimed secondary wavelet produced by the nonlinear effect. Further, Sen et al. does not teach Appellant's claimed processing the received secondary wavelet in identifying the object (in the context of claim 1 as a whole) or provide any means to do so. Sen et al. is directed to backscattering, not processing the received secondary wavelet (that is) produced by the nonlinear effect.

Appellant previously stated in prosecution, that "the Examiner's declaration should explain by what means his contended secondary wavelet is produced by the nonlinear effect in Sen et al." The Examiner provided no declaration or explanation, and Appellant submits that this is because there is no explanation. Backscattering is not produced by the nonlinear effect in Sen or anywhere else.

Therefore, the Examiner has not prima facie shown a disclosure of all claim elements.

c. Appellant is not arguing limitations into the claim

i. Appellant's Argument in the Brief

In the Brief at pages 10-11 (see also Brief at pages 7-9), Appellant stated:

> "There is no mention whatsoever of the claimed secondary wavelet in cited art cited in the Office Action. More particularly, the cited art does not disclose the claimed receiving the secondary wavelet produced by the nonlinear effect; and processing the received secondary wavelet in identifying the object.
>
> As stated above, the Office Action dated February 27, 2007, states: 'Appellant argues that the Sen . patent does not disclose or show the claimed "secondary wavelet... This is not agreed with. Sen et al. discloses "backscattering..."'

But as also stated above, backscattering does not disclose a secondary wavelet, e.g., in Sen. As per the above-mentioned definitions, "backscattering" refers to: "the deflection of radiation or particles by scattering through angles greater than 90 (degrees) with reference to the original direction of travel," and with regard to acoustics, 'wavelets' refers to:

> 'mathematical functions that cut up data into different frequency components, and then study each component with a resolution matched to its scale. They have advantages over traditional Fourier methods in analyzing physical situations where the signal contains discontinuities *and sharp spikes*, as well as being compactly constrained in time duration.'

As further stated above, from the plain and ordinary meaning of the terms, the Examiner's contended 'backscattering' **has no bearing whatsoever** on the claimed secondary wavelet... etc.

The applied references fail to disclose all expressly claimed elements or limitations, for example *the secondary wavelets*, and thus the rejection fails to make a prima facie case of obviousness. In re Fine, 873 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."

ii. Examiner's Answer

In the Answer, at page 5, the Examiner argues:

"Appellant is impermissibly arguing limitations or definitions into the claim, which limitations or definitions are NOT BEING CLAIMED."

iii. Appellant's Reply

Appellant is not arguing limitations into the claim, but rather, is arguing that: (1) the explicit claim limitations have a meaning in the art, (2) the Examiner's opinion of the meaning of the explicit claim terminology is not supported by evidence; (3) evidence of record (Appellant's specification and definitions) contradicts the Examiner's opinion as to the meaning of the explicit claim terminology; and (4) the Examiner's opinion makes no sense on its face and has no corresponding particular components in Sen et al. Therefore, the Examiner has not established prima facie obviousness of the explicit claim requirements.

With regard to the meaning of explicit claim limitations in the art, the want of evidence to support the Examiner's opinion, and evidence contradicting the Examiner's opinion, the Board's

attention is directed to this Reply, sections I, and II(A)2-3 above.

It is also clear that the Examiner's opinion as to the meaning of the claim terminology makes sense. Appellant has explicitly required an Examiner explanation as to what *particular* components in Sen et al. are carrying out Appellant's claimed steps, but no explanation has been forthcoming. Appellant submits that the Examiner has provided no explanation because there is no explanation.

One can see that there is no explanation by playing out the Examiner's opinion, for the sake of argument. For example, according to the Examiner's opinion, (backscattering) reads on Appellant's claimed secondary wavelet in the context of receiving the secondary wavelet produced by the nonlinear effect and the claim as a whole. Consider the Examiner's theory to see whether it makes sense by supplanting the word (backscattering) for secondary wavelet in the claim. If the Examiner were correct, then there would be some kind of plausible meaning to backscattering produced by the nonlinear effect. But the backscattering in Sen et al. is not produced by a nonlinear effect, but rather, the deviation of a wave upon striking an object. Thus, when called upon to do so, the Examiner has offered no explanation of his opinion regarding backscattering produced by the nonlinear effect. And indeed, the idea makes no sense.

The claim requires a cause an effect that is not captured by the Examiner's attempt at myopic parsing of claim elements out of their context.

Backscattering is the resulting action [change in direction] of a primary wave, whereas a secondary wavelet is radiation produced by the materials being impinged by the primary wave, so as to cause non-linear effects. The cause and effect of the secondary wavelet produced by the nonlinear effect collectively have no correspondence to Sen et al.

The falsity of the Examiner's opinion can also be seen in another deficiency in the evidence: What particular component(s) in Sen et al. apparatus process -- not just any backscattering -- but the particular backscattering produced by the nonlinear effect? The Examiner offers no idea, and that is because the meaning of backscattering produced by the nonlinear effect makes no sense, so of course the Examiner cannot point to particular components in the Sen et al. apparatus that carry out Appellant's claim requirements.

In sum, (1) the explicit claim limitations have a meaning in the art, (2) the Examiner's opinion of the meaning of the explicit claim terminology is not supported by evidence; (3) evidence of record (Appellant's specification and definitions) contradicts the Examiner's opinion as to the meaning of the explicit claim terminology; and (4) the Examiner's opinion makes no sense on its face and has no corresponding particular components in Sen et al. Therefore, the Examiner has not established prima facie obviousness of the explicit claim requirements.

B. No proper reason to combine

As set out above, not all claim limitations are set out in the cited art, and this is determinative for reversal of the Final Rejection.

However, if the Board feels otherwise, then Appellant argues that the Examiner failed to make out a proper case of prima facie obviousness because no proper reason to combine has been set out for 3 reasons set out numerically below.

1. Improper reason to combine or modify: inoperability of references

i. Appellant's Argument

In the Brief at pages 12-14, Appellant stated:

> "Appellant's filing of November 26, 2006, notes that the Examiner's contended combination of teachings would render the cited art inoperable for their respective purposes. In the Office Action dated February 27, 2007, the Examiner states: 'This is also not convincing since the mere substitution of one non-linear acoustic source (Rees) for another (Sen et al.) would not render inoperable the system of Sen et al.'

However, Rees is an optical detection system and Sen et al. is not. Sen is an acoustic detection system. Rees uses a laser to detect sound generated by weather: as regards detection, the acoustic source in Rees is inclement weather (Col. 1, line 39, etc.). Sen et al. uses an acoustic pulse emitter and corresponding acoustic sensors.

The non-overlapping PTO classes of Rees and Sen et al. evidence that these patents involve different technologies, and the Examiner has not explained how one could meld a laser to optically detecting weather (Rees) into a system using sound (from an acoustic pulse emitter Sen et al.) to detect land mines underground.

The Examiner has pointed to Col. 15, line 58 - Col. 16, line 4 in Rees:

> 'using a non-linearly generated and radial range focused acoustic sawtooth wave to create an acousto-optic mirror (AOM) acting as a retroreflector. Sufficient acoustic enhancement to crate a shock front to a nonlinear acoustic sawtooth wave is brought about by transmitting a synthetic spectrum waveform using a multiple set of phase locked, pulsed acoustic carrier waveforms each emitted from individual projectors in a large array of loudspeakers. Constructive interference occurs when these acoustic pulses come together to add coherently... the each of these discontinuities act as an optical mirror.'

This section of Rees establishes that Rees is still a system for optical detection of inclement weather that can involve 'transmitting a synthetic spectrum waveform using a multiple set of phase locked, pulsed acoustic carrier waveforms each emitted from individual projectors in a large array of loudspeakers' to obtain 'constructive interference' that acts 'as an optical mirror.' But 'constructive interferences' and an 'optical mirror' would not function in the ground of Sen.

The Examiner contends that 'the mere substitution of one non-linear source (Rees) for another (Sen et al.) would not render inoperable the system of Sen et al. However, an acousto-optic mirror (Rees) of course would not function in the granular bed of Sen et al.-e.g., for detecting land mines. That is, Rees's optical mirror is to redirect a laser beam, which of course could not possibly function in the ground in Sen et al.

Attention is respectfully directed to Appellant's filing of April 26, 2007, Para. 2, pages 4-6. A rejection premised on an improper reason to combine (contended combination of teachings rendered inoperable) is clear error. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)."

ii. Examiner's Answer

In the Answer, at page 6, the Examiner's argues:

"The mere substitution of one non-linear acoustic source (Rees) for another (Sen et al.) would not render inoperable the Sen et al. system."

iii. Appellant's Reply

Clearly, the Examiner provides no basis for his mere contention. Clearly the Examiner did not respond to Appellant's *reasons* why the proposed combination would render the cited art inoperable for their respective purposes.

And the reason why the Examiner did not respond to Appellant's *reasons* is that there is no way to answer. The Examiner did not make out a case of prima facie obviousness at least because the Examiner did not provide a proper reason to combine.

2. Improper reason to combine or modify: change principles of operation

i. Appellant's Argument

In the Brief at pages 14-15, Appellant stated:

"In the Office Action dated February 27, 2007, the Examiner states: 'such a substitution would not change the "principles of operation" of the Sen et al. system.'

But again, optical and acoustic systems have different principles of operation. More particularly, Rees teaches, in the Abstract:

> 'Method and apparatus for detecting conditions in the atmosphere which are hazardous to flying aircraft and providing early warning to pilots or ground personnel. The method includes using a laser beam and a coherent optical receiver to optically sense sound waves produced by those hazardous conditions and measuring the effect of those sound waves on the transmitted and received optical beams.'

Sen et al. teaches, in Fig. 9, 'a detection system according to the present invention' (Col. 6, line 26) which shows a platform whereby an acoustic pulse generator 34 points downward and 'sensor 33 has a tip that contacts the soil.' Col. 6, line 36.

The Examiner's proposed attempt to combine teachings must change the principles of operation: As stated above, Rees is premised on the use of a laser and optical detection of the sound produced by weather (See Rees, as more precisely set out in Col. 1, line 39 etc., in view of the abstract) while Sen et al. uses a platform whereby an acoustic pulse generator 34 points downward so that 'sensor 33 has a tip that contacts the soil.' (See, e.g., Col. 6, line 36). Thus, the transmitters, detectors, and other equipment of the respective patents operate by different principles of operation. For example, the beam splitters, an optical line array, telescope, etc. of Rees operate by different principles of operation than, e.g., Fig. 9, of Sen et al. For further example, receiving the 'acoustic impulse' of Sen et al. in the 'telescope' of Rees would not function without substantially changing principles of operation. Sen et al.'s detectors are

unsuitable for optical detection (presumably, under the Examiner's theory, from the ground of Sen et al.).

Part of the reason that the proposed substitution is completely implausible is because the respective purposes are not the easiest to harmonize e.g., because one cannot pass a laser beam (Rees) underground (Sen et al.) for the purpose of detecting 'conditions in the atmosphere which are hazardous to flying aircraft' (Rees). Nor are weather conditions (Rees) to be found in the 'granular bed' of Sen et al. Nor do non-metal land mines of Sen et al. fly in inclement weather (Rees) or require a ground crew. Nor does an acousto-optic mirror function in the granular bed of Sen et al. for detecting land mines. Contradiction between the respective references is pervasive, so of course their operating principles are incompatible, the Examiner's view that a combination would have been obvious is and completely implausible.

Attention is respectfully directed to Appellant's filing of April 26, 2007, Para. 3, pages 6-8. A rejection premised on an improper reason to combine (change in the principles of operation of the devices in the contended combination of teachings) is clear error. In re Clinton, 527 F.2d 1266, 188 USPQ 365 (CCPA 1976)."

ii. Examiner's Answer

In the Answer, at page 6, the Examiner argues:

"such a substitution would not change the 'principles of operation' of the Sen et al. system."

iii. Appellant's Reply

Clearly, the Examiner provides no basis for his mere contention. Clearly the Examiner did not respond to Appellant's *reasons* why the proposed combination would change the principles of operation of the devices in the contended combination of teachings.

And the reason why the Examiner did not respond to Appellant's *reasons* is that there is no way to answer. The Examiner did not make out a case of prima facie obviousness at least because the Examiner did not provide a proper reason to combine.

3. No proper motivation or suggestion to combine or modify: references teach away.

i. Appellant's Argument

In the Brief, at pages 15-16, Appellant stated:

"In the Office Action dated February 27, 2007, the Examiner states: 'the increased acoustic enhancement, as suggested by Rees, is motivation.'

The Examiner has omitted that the reason for this feature in Rees is 'to create an acousto-optic mirror' (Col. 15, line 60). An acousto-optic mirror does not function in the granular bed of Sen et al. for detecting land mines. Thus, the Examiner has provided no plausible reason to combine these diverse patents, and indeed the references teach away from the proposed combination.

Attention is respectfully directed to Appellant's filing of April 26, 2007, Para. 4, pages 8-9. A rejection premised on no proper reason to combine is clear error, and a rejection premised on references that teach away from the combination is clear error. In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002) and In re Fine, 873 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), respectively."

ii. Examiner's Answer

In the Answer, at page 6, the Examiner argues:

"...the increased acoustic enhancement, as suggested by Rees, is motivation.

iii. Appellant's Reply

It is respectfully submitted that the Examiner has mischaracterized the record to the Board by omitting that the reason for this feature in Rees is 'to create an acousto-optic mirror' (Col. 15, line 60), and not increased acoustic enhancement - And an acousto-optic mirror does not function in the granular bed of Sen et al. for detecting land mines.

All evidence must be considered when determining whether there is a proper reason to combine or modify cited art. Providing one reason, out of context from the cited art, and that flies in the face of all the evidence, is not a proper reason to combine or modify.

By ignoring the evidence as a whole, the Examiner has provided no plausible reason to combine these diverse patents, and indeed the references teach away from the proposed combination or modification.

C. Failure to provide a response sufficient under 35 U.S.C. Sec. 132

While the foregoing is determinative for reversal of the Final Rejection, should the Board feel otherwise, it is also submitted that the Examiner failed to provide a proper rejection under

35 U.S.C. Sec. 132.

i. Appellant's Argument

In the Brief at page 17, Appellant stated:

"35 U.S.C. Sec. 132 requires that the PTO provide 'the reasons for such rejection... together with such information as may be useful in judging the propriety of continuing prosecution....' The Examiner failed to provide the requested information.

Attention is respectfully directed to Appellant's filing of April 26, 2007, pages 3, 4, 5, 7, and 8. A rejection non-compliant with Sec. 132 is clear error. Evidence, such as the Examiner's declaration, was also required - but not provided.

As stated above, there is no mention whatsoever of the claimed secondary wavelet in cited art cited in the Office Action. Appellant requested, and is entitled to 'information' as to how, pursuant to the Examiner's rejection, backscattering discloses the secondary wavelet as claimed and how or by what means the Examiner's contended secondary wavelet is produced by the nonlinear effect in Sen et al. Appellant required PTO evidence to support the contentions that these elements were disclosed, but there was no Examiner response. Because there is no mention whatsoever of the claimed secondary wavelet in cited art in the Office Action and no proper means by which to understand the basis for the rejection, and further because the dictionary definitional evidence contradicts the Office Action and the Final Rejection did not provide the 'information' sought pursuant to Sec. 132, the rejection fails to make out a proper rejection."

ii. Examiner's Argument

The Examiner did not respond to this argument.

iii. Appellant's Reply

It is indeed disappointing that the Examiner did not heed nor respond to this statutory requirement. From the failure to provide statutorily required information or to consider Appellant's evidence of nonobviousness though to the appeal, the examination of this application has not been carried out properly. Of course, it hurt the Appellant.

III. Summary

The rejection is premised upon a misunderstanding of the art, as set out in the Reply, Section I Overview, and repeated here for emphasis.

> "As an overview, as the terminology is used in the art (e.g., dictionary definitions of record and in Appellant's specification), a 'wavelet' is a subset [or snippet] of a wave. A 'secondary wavelet" results from non-linear acoustic generation [or radiation] produced by matter when a primary wave impinges upon the matter. The terms 'primary' and 'secondary' are consistent with a transformational process - think the primary and secondary windings of a transformer. On the other hand, 'backscattering' [or backscatter] describes a deviation of a wave upon striking an object at a deviation angle greater than 90 degrees from the incident wave - think of light reflecting back from a mirror in the direction of the light source. The cause and effect of backscattering are different than the cause and effect of a secondary wavelet.
>
> Backscattering therefore is the resulting action [change in direction] of a primary wave, whereas a secondary wavelet is radiation produced by the materials being impinged by the primary wave, so as to cause non-linear effects. (Consistent with the instant invention herein, these non-linear induced effects result in different space-time relationships (frequencies, etc.) that are indicative of the type of material, so as to enable the detection that is more precisely stated in the claims.) In sum, one having ordinary skill in the art would know that "backscattering" and "a secondary wavelet" are different phenomena that have no bearing on each other, and that backscattering in no way reads on a secondary wavelet.
>
> To further appreciate the different meanings of secondary wavelet versus 'backscattering' in the context of the claim as a whole, consider claim 1.
>
> 1. A method of identifying an object, the method including the steps of:
>
> directing a primary acoustic waveform at the object to produce a nonlinear acoustic effect by using multiple projectors driven by a synthetic spectrum;
>
> receiving a secondary wavelet produced by the nonlinear effect; and
>
> processing the received secondary wavelet in identifying the object.
>
> Backscattering is not *...produced by the nonlinear effect...*.
>
> The present invention claims a secondary wavelet produced by the nonlinear effect. The Sec. 103 obviousness rejection is premised on Sen et al., which is directed to backscattering. Backscattering and secondary wavelets are different phenomena that have no bearing on each other. Contrary to the Examiner's contention and rejection, backscattering does not read on secondary wavelet produced by the nonlinear effect."

In a nutshell, then, the rejection is premised upon a misunderstanding of the art.

The misunderstanding manifests itself in many ways. Examiner misconstrued explicit claim terms and failed to timely consider definitional evidence of unobviousness or carry out prosecution in accordance with MPEP Sec. Sec. 707.7(f).

More so, the applied references fail to disclose all expressly claimed elements, such that a prima facie case of obviousness has not been made out.

Even if somehow all claim requirements can be opined into the cited art, there has been no proper reasoning as to how or why one of ordinary skill would combine them to reach Appellant's claimed invention because it would lead to inoperability of references and change the principles of operation references, and further the references teach away from a combination to reach Claim 1 as a whole. (No proper rational or evidence has been provided in which the combination of the prior art could result in the Appellant's Claim 1, since as shown, an acousto-optic mirror does not function in the granular bed of Sen et al. to allow for mine detection.)

Moreover, even if one could contort the prior art teachings to meet Claim 1, the rejection is still improper for failing to comply with 35 U.S.C. Sec. 132. Accordingly, the Examiner has not met his burden of making out a prima facie case that Claim 1 is unpatentable.

Appellant claims small entity status, and if any extension is necessary, it is respectfully requested that this be deemed a petition therefore. The Commissioner is hereby authorized to charge any fees associated with the above-identified patent application or credit any overcharges to Deposit Account No. 50-0235.

Please direct all correspondence to the undersigned at the address given below.

Respectfully submitted,

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